

# MINI

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## BENCHTOP CHAMBER



**NAE**

## MINI Bench Top Chambers



The MINI Bench top chambers are compact sized humidity chambers which can be placed on a work bench or on the optional stand provided. These chambers are small, light weight and have low audible noise which are ideal for confined work spaces.

### Features

- Portable models for easy handling and installation
- Space-saving, smaller foot-prints suitable for desktop operations
- Ideal for laboratory conditions with extremely lower noise levels < 55 db
- Capable to perform all operations similar to larger chambers
- Eurotherm Controller with optional RS 232 / 485 communication port
- Adjustable tray provision and standard access ports
- Safety devices for temperature, excess pressure, overload, and low water level protections.



## MINI Bench Top Chambers

### Models Available

Models	MI-80-A-H	MI-80-A1-H	MI-80-A2-H
Temperature Range	-40°C to 85°C (-40°F to 185°F)	0°C to 85°C (32°F to 185°F)	Ambient to 85°C (185°F)
Temperature Fluctuation	0.1°C to 1°C 0.18°F to 1.8°F		
Temperature Gradient	0.5°C to 1.5°C 0.9°F to 2.7°F		
Rate of change (cooling)	1°C/min 1.8°F/min		
Rate of change (Heating)	1°C/min 1.8°F/min		
Test Space volume	80L (400W x 400D x 500) mm 2.8 cu. ft. (15.75"W x 15.75"D x 19.69"H)		
Exterior Dimensions	(650W x 1200D x 850H) mm (25.20"W x 42.25"D x 33.46"H)		
Relative Humidity	30% to 98% RH		45% to 98% RH
Humidity Fluctuation	1% to 3% RH		
Viewing Window	15.75 x 15.75" (400 mm X 400 mm) multi-pane insulated window glass.		
Controller	Provided with a Eurotherm - temperature indicator and controller.		

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Models	MI-80-A-H	MI-80-A1-H	MI-80-A2-H
<b>Housing</b>	<ul style="list-style-type: none"> <li>Will be a mono block construction that comprises all systems necessary for operation.</li> <li>Outer material will be primed and phosphated.</li> <li>Color Grey (RAL-7032) Epoxy based Electrostatic powder coating for a good aesthetic look.</li> <li>The exterior surface will have high wear resistance.</li> <li>Cold rolled mild steel for all panels and chassis.</li> <li>Leveling pads will be provided for installation.</li> </ul>		
<b>Test Space</b>	<ul style="list-style-type: none"> <li>Pre-polished stainless steel with high gloss brush finish.</li> <li>18swg stainless steel with reinforced bottom floor will be provided to withstand a distributed load of 500Kg /m2.</li> <li>All seams will be TIG welded ensuring a vapor tight enclosure.</li> <li>Available with a clear workspace.</li> <li>Double continuous steal rings of silicone rubber will be mounted on a thermal breaker strip as the gasket to ensure complete sealing and zero conduction form the test space to the exterior.</li> </ul>		
<b>Door</b>	<ul style="list-style-type: none"> <li>Robust hinges on the right hand side of the chamber will be provided.</li> <li>Spring loaded latch will be provided with a locking facility.</li> <li>The inner surface of the door will be provided with pre-polished stainless steel and will be mounted such that conduction is avoided.</li> <li>A micro switch is provided for an interlock between the conditioning fan and the door opening.</li> </ul>		

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Models	MI-80-A-H	MI-80-A1-H	MI-80-A2-H
<b>Insulation</b>	<ul style="list-style-type: none"> <li>Will be of PUF insulation with low conductivity.</li> <li>Insulation Thickness of 75mm.</li> </ul>		
<b>Viewing Window</b>	<ul style="list-style-type: none"> <li>A 400 x 400 mm multi-pane insulated window glass for inspection will be provided on the door.</li> <li>The multi pane window will consist of 5 toughened glasses sealed with silicone and separated by spacers to form a completely vaccumised window.</li> <li>Defogger heaters will be provided with an auto cut off.</li> <li>Halogen Lighting will be provided to view the specimen under test.</li> </ul>		
<b>Test Space Conditioning</b>	<ul style="list-style-type: none"> <li>The air circulation within the chamber will be as close to laminar ensuring uniform airflow all across the workspace.</li> <li>Standard frame TEFC motor will be used with a detachable extended shaft.</li> <li>Only the co-axial fan blades will be exposed in the conditioning plenum ensuring the drive motor will be placed outside.</li> <li>The conditioning plenum will be covered with a removable sheet providing easy access for maintenance.</li> </ul>		
<b>Heating System</b>	<ul style="list-style-type: none"> <li>Stainless steel sheathed air heaters will be used to achieve the desired positive set temperature.</li> <li>The heaters will be placed in the conditioning plenum such that there is no direct radiation from the heaters onto the test specimen.</li> <li>Heater outputs are controlled through a SSR for superior stability and control in temperature.</li> </ul>		

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Models	MI-80-A-H	MI-80-A1-H	MI-80-A2-H
<b>Refrigeration System</b>	<ul style="list-style-type: none"> <li>• High capacity ultra-low temperature hermetic compressor will be used.</li> <li>• The compressor will be mounted on anti vibration pads.</li> <li>• Eco friendly Non-CFC refrigerant R-404a will be used.</li> <li>• An air cooled condenser specially designed for tropical climates is driven by a co-axial fan.</li> <li>• The heat exchanger coils will be with Inner grooved copper tubes and will be finned for maximum heat transfer.</li> <li>• Hot gas bypass systems will be used for protection against No-Load condition and superior stability and control in temperature.</li> </ul>		
<b>Dehumidification</b>	<ul style="list-style-type: none"> <li>• Refrigeration based de-humidification coils are used.</li> <li>• The desired level of lower humidity will be achieved by maintaining the precise dew point temperature.</li> <li>• The output will automatically be activated based on the set point as well as in ramp up mode after a low temperature cycle.</li> </ul>		

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Models	MI-80-A-H	MI-80-A1-H	MI-80-A2-H
<b>Humidification</b>	<ul style="list-style-type: none"> <li>A low-pressure droplet free vapor boiler using direct vaporization system will be used.</li> <li>Reservoir will be provided at the side of the chamber with an 8 x 6mm PU tube quick connector.</li> <li>The de-mineralized water which is recommended is connected to the reservoir and is controlled automatically through a water-in solenoid.</li> </ul>		
<b>Instrumentation &amp; control</b>	<ul style="list-style-type: none"> <li>Provided with temperature indicator cum controller.</li> <li>Special PID control algorithm loaded with auto tuning features.</li> <li>Sensing done through a Platinum resistance RTD PT-100 for temperature and Capacitive Solid State sensor for humidity.</li> <li>Display of set value &amp; actual value of temperature in °C and humidity in %RH.</li> <li>Digital Time totalizer will be provided to monitor usage.</li> </ul>		
<b>Provisions</b>	<ul style="list-style-type: none"> <li>One standard access port of 50 mm (1.9") diameter with a silicone plug.</li> <li>Adjustable tray provision with one stainless steel tray.</li> <li>Standard industrial 3 pin 16 A plug with 5m (16') cable.</li> </ul>		
<b>User Manual</b>	<ul style="list-style-type: none"> <li>One set of operating cum maintenance manual in English.</li> <li>Complete drawings of mechanical layout, refrigeration and electrical system with clear identification will be provided.</li> </ul>		

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Models	MI-80-A-H	MI-80-A1-H	MI-80-A2-H
<b>Safety &amp; Protection Devices</b>	<ul style="list-style-type: none"> <li>• Complete or circuit relevant protection based on fault with audio-visual alarm.</li> <li>• Independent temperature protection for test specimen (T max &amp; T min)</li> <li>• Software temperature limiter for min. /max. test chamber temperature.</li> <li>• Protection for excess pressure in refrigeration circuit.</li> <li>• Bypass protection at Non-Load conditions.</li> <li>• The control and monitoring system will be protected against input electrical surge and spike.</li> <li>• Common Earth point will be provided.</li> <li>• Low water level protection will be provided with an electrical float switch.</li> </ul>		
<b>Power Supply</b>	<ul style="list-style-type: none"> <li>• 230V AC, <math>\pm 10\%</math>, 1 Phase, 50Hz + Earth</li> </ul>		
<b>Max Connected Load</b>		3 KW	2 KW



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### Optional Accessories:

Code	Name of the Unit	Brief Description
NANO-001	Trays	<ul style="list-style-type: none"> <li>Stainless steel rod type tray</li> <li>Distributed load of 50 Kg /m<sup>2</sup></li> <li>Size -375mm x 375mm</li> </ul>
NANO-002	Stand	<ul style="list-style-type: none"> <li>MS Frame Structure with electrostatic powder coating will be provided.</li> <li>The stand will have a height of 1M to ensure working height.</li> </ul>
NANO-003	Water De-ionizer	<ul style="list-style-type: none"> <li>Provides Water of suitable purity to run the chamber with a continuous water supply.</li> <li>Min operation pressure: 2Kg /cm<sup>2</sup></li> <li>Vessel Size: (155 Dia x 595 H)mm</li> </ul>
NANO-004	Programmable Controller	<ul style="list-style-type: none"> <li>Eurotherm high performance controller having a dual 5 digit and a 2 line LCD panel. Dimension of 96W x 96 H x 150D mm</li> <li>Sensing done through a platinum resistance PT-100</li> <li>Display of set value &amp; actual value of temperature.</li> <li>Refer to and modify any previously created test programs.</li> <li>Programs will easily be stored and recalled at any time and activated without the necessity of operator having prior programming knowledge.</li> </ul>

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Code	Name of the Unit	Brief Description
		<ul style="list-style-type: none"> <li>• Built in capability to restart the test chamber after power failure.</li> <li>• RS-232/ RS485 interface for bidirectional communication with computer.</li> <li>• Print and store any test program in text (Excel format) &amp; Graphical (Bitmap Image).</li> <li>• Will have the capability of data logging temperature online in terms of text and graphical with respect to time.</li> </ul>



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